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DEVICE AND SYSTEM FOR INFORMATION MANAGEMENT

Field of the Invention

The present invention relates to a filing appliance according to the preamble to claim 1, a system according to the preamble to claim 12, a method in a computer system according to the preamble to claim 18, a computer program according to claim 19 and a memory medium according to claim 20.

Background Art

Filing appliances, binders, or files of the above-mentioned type, are used in huge amounts almost everywhere. A file or a filing appliance generally relates in the present application to a cover for use over and/or under a set of sheets of paper, like the cover of a book. The cover can, but need not, be more or less stiff. The file is provided with means for holding these sheets, which sheets in principle can also be made of other materials than paper. These means can be openable, such as in a ring binder, but the sheets of paper can also be permanently fixed to the filing appliance e.g. by means of a spiral binding, such as in a spiral binder, or by gluing, folding etc.

Filing appliances or files of this type are, as mentioned above, widely used, in many fields of application. A spiral binder can be used, for instance, to make notes

about a specific subject field. The user of the binder can then use it at, for instance, lectures, seminars and in individual studies.

Filing appliances of prior-art type have, however, a number of limitations. It can be difficult to copy notes from such a filing appliance and this necessitates at least the use of a special copying machine which is not available to all users. Sharing, over long distances, notes from a filing appliance of prior-art type is not easy either. Of course, a sheet copied from the file can be faxed, which in addition to the above-mentioned copying machine also requires a fax machine. Alternatively, the pages that are to be transmitted can be scanned, which requires a flat bed scanner. In general, filing appliances of prior-art type result in complicated and expensive handling and communication of information, if writing down things on the sheets of paper of the filing appliance and reading the information written on the sheets is not sufficient.

20 Summary of the Invention

An object of the present invention is to wholly or partly obviate the above-mentioned problems.

This object is achieved by a filing appliance as defined in claim 1 and a system according to claim 12, a method in a computer system according to claim 18, a computer program according to claim 19 and a memory medium according to claim 20.

In a preferred embodiment, an input field is also adapted to be filled in at least with an illustration.

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This permits a more expressive way of recording an information object, which way is also independent of language and of full ability to read and write.

5 Preferably, sheets of paper in at least a subset of the plurality of sheets of paper are provided with a position-coding pattern, so that information which is filled in on a sheet of paper in the subset by means of said drawing device is recordable as a digital graphical input, which can be a vector-based input, the filing appliance comprising a number of appearance icons, a marking of an appearance icon by means of the drawing device being adapted to give the digital graphical input a visual property, such as stroke weight or line color.

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15 This allows more expressive graphical inputs to be recorded digitally.

In a preferred embodiment, the filing appliance comprises an address field provided with a position-coding pattern, and an order icon, a marking of the order icon by means of said drawing device being adapted to initiate an operation in the computer system, which operation performs an order of another filing appliance to be delivered to an address entered in the address field.

This allows easy ordering of new filing appliances.

25 Preferably, at least sheets of paper in a subset of the plurality of sheets of paper are provided with a position-coding pattern, so that information filled in on a sheet of paper in the subset can be recorded by means

of said drawing device as graphical inputs, and a send icon provided with a position-coding pattern, a marking of the send icon initiating an operation in the computer system, in which operation graphical inputs entered on the sheet of paper and recorded digitally are transferred to the computer system and optionally on to an external computer system.

With such a filing appliance, transfer of information can be initiated without the user directly needing to initiate an operation in the computer system by means of e.g. a computer mouse or keyboard.

In a preferred embodiment, the information object comprises a table in a database. This simplifies arranging and editing of information entered in a system.

In an alternative embodiment, the information object comprises a file, which results in a comparatively simple recording procedure.

A filing appliance preferably comprises an archiving icon, a marking of the archiving icon being adapted to initiate an operation wherein position information corresponding to strokes of the drawing device, which strokes are generated after a reference time point, is transmitted from the drawing device to the computer system. This allows the user to utilize the drawing device and the filing appliance offline and subsequently transferring registered information.

According to a second aspect, the invention relates to a system for information management. The system is characterized in that it comprises a filing appliance, a drawing device and a computer system, and that the filing appliance comprises means for holding a plurality of sheets of paper, at least one input field which is provided with a position-coding pattern and adapted to be filled in by means of the drawing device which is adapted to record, using said position-coding pattern, positions in the input field in order to digitally record information entered in the input field, and an initiation icon provided with a position-coding pattern which is arranged in such manner that a marking of the initiation icon by means of the drawing device initiates such an operation in said computer system, which is adapted to communicate with the drawing device, so that an information object is created, which is identifiable at least by means of said information entered in the input field.

The system results in advantages corresponding to those of the above-mentioned filing appliance and can be modified similarly.

In a preferred embodiment of the system, the computer system is integrated with the drawing device. This results in a compact system that is easy to handle.

In yet another preferred embodiment, the filing appliance comprises an archiving icon provided with a position-coding pattern, which is arranged in such manner

that a marking of the archiving icon by means of the drawing device initiates an operation wherein position information corresponding to strokes of the drawing device, which strokes are generated after a reference time point, is transmitted from the drawing device to the computer system. This allows the user to utilize the drawing device and the filing appliance offline and subsequently transferring registered information.

Preferably, the reference time point is set to the current time in connection with the transmission of the position information.

The reference time point may be stored in the drawing device, which is easy to implement, or it may be stored in the computer system, which allows the drawing device to operate vis-à-vis several computer systems simultaneously.

According to a third aspect, the invention relates to a method for arranging incoming information in a computer system. The method is characterised in that a first information object in the computer system is open vis-à-vis an application in the computer system, the first information object being related to a first filing appliance; that position information, which arises when a drawing device is moved over a position coded pattern, is received by the computer system, wherein the position information which is generated at a time point t_{act} comprises information that is intended to make open a second

information object vis-à-vis the application in the computer system, the second information object being related to a second filing appliance; and that position information generated before said time point t_{act} is inserted in the first information object whereas position information generated after said time point t_{act} is inserted in the second information object. This allows the activation of a new filing appliance vis-à-vis the computer system to be performed offline. The computer system still arranges incoming information correctly.

Brief Description of the Figures

Figs 1a and 1b illustrate various conceivable embodiments of a filing appliance.

Fig. 2 illustrates an open filing appliance according to the invention.

Fig. 3 illustrates an open filing appliance according to an embodiment of the invention with an unfolded palette flap as well as a drawing device and a computer system in connection with which the inventive filing appliance is intended to be used.

Fig. 4 shows a filing appliance according to an embodiment of the invention with an open order page.

Fig. 5 shows a sheet of paper for a filing appliance according to an embodiment of the invention.

Fig. 6 shows, in a more distinct form, distinctive features of a filing appliance according to the present invention, which are indicated in Fig. 2.

Fig. 7 shows, in a more distinct form, distinctive features indicated on a sheet of paper as shown in Fig. 5.

Fig. 8 shows, in a more distinct form, distinctive
5 features indicated on the palette flap shown in Fig. 3.

Fig. 9 shows, in a more distinct form, distinctive features indicated on the order page shown in Fig. 4.

Fig. 10 shows an example of the appearance of a position-coding pattern.

10 Fig. 11 shows another example of the appearance of
a position-coding pattern.

Fig. 12 illustrates a method in a computer system according to an aspect of the invention.

Description of Preferred Embodiments

15 Fig. 1a and Fig. 1b illustrate various conceivable
embodiments of a filing appliance.

In Fig. 1a, the filing appliance is in the form of a ring binder. Its cover parts 1 (of which the upper is visible and the lower is concealed), i.e. the parts encompassing the sheets of paper, are then preferably relatively stiff. A comparatively large number of sheets are with the aid of attachment means 2 of bifurcated form (also to be found in Fig. 2) releasably attached in the filing appliance.

25 In Fig. 1b the filing appliance is in the form of a spiral binder. The cover parts 3 are then usually softer than those of the ring binder and a usually somewhat smaller number of sheets of paper are then attached with

the aid of attachment means 4 of coiled form. Also other types of attachment means than those mentioned above can be used, such as clamps.

Fig. 2 shows an open filing appliance according to
5 the invention.

A first 6 and a second 7 input field as well as an initiation icon 8 are printed on the inside 5 of the top cover part. The first input field, the second input field and the initiation icon are shown more clearly in Fig. 6.

10 A user who intends to use the filing appliance fills
in either text in the first input field 6 or an
illustration in the second input field 7, or both. The
first 6 and the second 7 input field are provided with a
position-coding pattern (not shown). The position-coding
15 pattern can be relatively coded, but is preferably
absolutely coded, which will be discussed in more detail
below. Also a combination of absolute and relative
position-coding patterns can be used.

A user can fill in text or digits that he or she
20 wants to characterize the filing appliance in the first
input field. The text or digits are filled in by means
of a drawing device of a type that simultaneously, while
using the position-coding pattern, detects positions on
the base on which the input field is printed. In this
25 way, the information entered in the first input field 6
is recorded by the drawing device, as a sequence of posi-
tions.

In the same way a user can enter an illustration in the second input field 7.

Preferably before, but possibly also after, doing this, the user marks the initiation icon 8. When the user has marked the initiation icon 8 he enters information in one of the first 6 or the second 7 input fields,. The marking can result in the initiation icon 8 being struck through, crossed out or merely touched by the drawing device. The initiation icon 8 may contain a position-code that exclusively indicates the initiation of a new filing appliance.

As this happens, the drawing device records a coordinate or position in the initiation icon, whereby an operation is initiated in the drawing device for communication with the computer system. In this operation, an information object, which can be, for example, a table in a database or a file, is generated in the computer system. This information object is then identifiable by means of the information entered in one of the input fields 6, 7.

Preferably, at least a subset of the sheets of paper which are attached in the filing appliance is also provided with position-coding patterns, so that notes being made on the sheets of paper using the drawing device are recorded by the same and can be entered in a suitable fashion in the information object created. In the case where the information object is a table, one of the sheets of paper can correspond to an item in the table.

The notes can then easily be printed using a printer connected to the computer system. They can also easily be sent to other interested people, for example as e-mail.

According to the present application, a position-coding pattern is generally used, which will later on be described in more detail. The position-coding pattern affords, as mentioned above, the possibility of recording text, digits and illustrations which are written on a sheet of paper, using a drawing device, which is capable of detecting positions on the sheet of paper by means of the position-coding pattern. This text or these digits can be recorded in vector format, but it is also possible to carry out character recognition operations as regards the entered information. An "A" entered on a sheet of paper using a drawing device as described above can thus be recorded either as a set of recorded coordinates, or as the character "A", with a certain ASCII code, for instance subsequent to OCR (Optical Character Recognition) interpretation.

As indicated above, the position-coding pattern can also be used to record Boolean variables. If positions in an initiation icon are recorded by the system, this means that a state in a computer system communicating with the drawing device changes state. When a user ticks a box provided with a position-coding number, this is thus recorded by the system so that a certain parameter is set to be a logic "one".

The first 6 and the second 7 input field, as well as the initiation icon 8, can, of course, be located in other parts of the filing appliance, for instance on the bottom cover 9 or one of the attached sheets of paper 10.

5 Fig. 3 shows an open filing appliance according to an embodiment of the invention with an unfolded palette flap 11 as well as a drawing device 12 and a computer system 13 (in the case shown, a PC), in connection with which the filing appliance according to the invention is
10 intended to be used. The filing appliance, the drawing device and the computer system jointly form a system for information management. The computer system may also consist of a storage on the Internet.

The palette flap 11 is provided with appearance
15 icons, which are shown more clearly in Fig. 8 and described in more detail in connection with the description of this Figure. Such appearance icons can also be printed on other parts of the filing appliance or on separate slips of paper or rulers.

20 The drawing device 12 is handheld and preferably of a type which makes an ink trace when writing on a base while at the same time positions on the base are recorded if this is provided with a position-coding pattern, which the drawing device 12 can interpret. The drawing device
25 12 can communicate with a computer system 13 by means of a cable, a short-range radio link or an IR (infrared)

link. The computer system, or the computer unit 13, can also be integrated in the drawing device.

Fig. 4 shows a filing appliance according to an embodiment of the invention with an open order page. The order page can be used to order a further filing appliance, for instance when the user's filing appliance is filled with writing. The distinctive features of the order page will be described in more detail in connection with Fig. 9.

Fig. 5 shows a sheet of paper for a filing appliance according to an embodiment of the invention.

At least one side of the sheet of paper is provided with a position-coding pattern so that notes, which are written on the sheet by means of a drawing device of the above type, can be recorded digitally by the drawing device and then be transmitted to the computer system. The sheet of paper also comprises functionality which is used to initiate transmission of information entered on the page from the drawing device to the computer system and optionally on to an external computer system, which will be described in more detail in connection with Fig. 7.

Fig. 6 shows, in a more distinct form, distinctive features of a filing appliance according to the present invention, which are indicated in Fig. 2.

The first input field 6 is adapted to be filled in with text and/or digits, for example as shown

"CHEMISTRY 1". The adaptation is made by comb patterns 16 being printed on the base to show the user where information is to be filled in and how large filled-in characters should be. As an alternative to the comb pattern, e.g. a checkered pattern can be used.

The second input sheet 7 is adapted to be filled in with an illustration by a larger area being indicated with a frame 17. In the shown Example, an illustration representing a test tube has been entered in the frame 17.

When the initiation icon 8 has been marked the text and/or the illustration is been entered, , whereupon the computer system communicating with the drawing device generates an information object called "CHEMISTRY 1" and optionally in the computer system linked to an icon representing a test tube.

Fig. 7 illustrates, in a more distinct form, distinctive features indicated on a sheet of paper shown in Fig. 5. A to-field 18, a title field 19, an e-mail box 20, a fax box 21 and a send box 22 are shown on the sheet of paper. Preferably, the entire side of the sheet can be provided with a position-coding pattern. A user may then with a drawing device of the above type write down notes on the sheet of paper, the notes being recorded digitally by the device and being transmittable to the computer system. The digitally recorded information may preferably be inserted in the relevant information object in the

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Pages in the binder, or the binder itself, may also be provided with an archiving icon 22b, the use of which will be described below.

When coordinates in the send area are detected, the processor 12c reacts and initiates connection to the computer system 13, for example via the communication unit 12f and a Bluetooth™ modem 13a, which is connected to the computer system 13. An application in the computer system 13 is opened. Which application is opened is determined by the coordinates in the send region.

The application records the coordinate area of the page, which is included in the above dash, and initiates a communication where the coordinates which are allocated to the coordinate area of the entire page are demanded. The coordinates that are stored in the buffer memory 12d of the drawing device and which belong to the coordinate area of the page are transferred to the application in the computer system. It should be noted that the application can determine that only one page from the binder is to be transferred, or a plurality of pages.

The application then determines how the transferred information is to be processed. Conveniently the information is stored in a file which is marked with the above-mentioned keyword or symbol or an identification in the title line 19, and optionally the date of the transfer.

The application can also be adapted to determine whether the boxes 20 or 21 are marked. If this is the

case, the application interprets the contents of the to-field 18 and creates a fax or an e-mail message. Next time the computer system is connected to the telephone network via a fax modem or to the Internet, or immediately, the fax or the e-mail message will be sent. The application can also provide an indication that the transmission is accomplished. In e-mail, a copy is suitably sent to the sender's e-mail letter box, confirming that the e-mail message has been sent.

After transfer of the information, the corresponding buffer memory in the drawing device is erased.

Alternatively, the drawing device may comprise a larger memory and keep all information in the filing appliance in question in the memory. When the next filing appliance is initiated, the memory is emptied to the computer system 13 and stored there permanently, whereupon the use of a new filing appliance is begun. The emptying of the memory can also take place to a server on the Internet etc.

The drawing device can also be arranged to continuously dump the contents of the memory to the computer system, as soon as a communication is established, i.e. as soon as there is contact between the drawing device and the computer system. The contents of the file or the block will then be available from the computer system for inquiries via an Internet connection.

The send box 22 can alternatively be a specific part of the continuous pattern of the page and a send function is then initiated, by the coordinates of the send box fulfilling a certain mathematical relationship, which triggers the processor 12c of the drawing device 12.

Fig. 8 shows, in a more distinct form, distinctive features indicated in the palette flap shown in Fig. 3. On the flap there is a set of wholly or partly framed areas 23-29, each having an associated symbol 23'-29'. Such an area 23 together with its associated symbol 23' can be said to be an appearance icon. By marking with the drawing device of the above type such an appearance icon, a subsequent, or preceding, digitally recorded graphical input on a sheet of paper in the filing appliance is given a certain visual property. This can be described as qualification of the graphical input. If, for example, the area 25 associated with the symbol 25' which represents the greatest stroke weight is marked, a subsequent graphical input on a sheet of paper can be given a corresponding stroke weight. This stroke weight does not appear on the sheet of paper but only in the digital recording of what is being written on the sheet. If the digitally recorded information is shown, for instance, in a user interface with the display of the computer system, the graphical input with the selected stroke weight thus appears. In some computer systems, the given visual property need not be shown. Fig. 8 shows three appearance

5 type, italics, underlining, subscript, superscript etc.
Qualification can also be made with different degrees
of authorization level: all, colleagues, personal etc.
Another qualification can be marking as a change.

Fig. 9 shows, in a more distinct form, distinctive features indicated on the order page shown in Fig. 4. Here is an address field 30, in which an address is to be entered. There is also a number field 31, in which the user should write how many additional filing appliances are to be ordered. Moreover there is an order icon 32. Marking of the order icon 3 by means of the drawing device initiates an operation in the computer system. With the operation, which can be carried out, for example, by sending an e-mail message from the computer system, the indicated number of filing appliances is ordered to the indicated address. A filing appliance may further comprise an archiving icon (22b, Fig. 7), a marking of the archiving icon being adapted to initiate an operation wherein position information corresponding to strokes of the drawing device, which strokes are generated after a reference time point, is transmitted from the drawing device to the computer system.

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The invention furthermore includes a method for ar-
 ranging incoming information in a computer system. This
 method, which is illustrated in fig 12, allows a user who
 is working, offline (i.e. without having the drawing
 5 device connected to the computer system) with a first
 filing appliance (with pages 40, 41) to activate a second
 filing appliance (with pages 42, 43, 44). Then a first
 information object 45, named maths1.svg (svg=scalabel
 vector graphics), in the computer system is open vis-à-
 10 vis the application in the computer system that receives
 position information from the drawing device. The term
 open indicates that this is the information object to
 which any received, filing appliance related, information
 should be inserted, not necessarily that information is
 15 currently inserted into the information object, since the
 user might work offline. The first information object 45
 is related to the first filing appliance. When the user,
 at a time point t_{act} activates the new, second filing
 appliance the drawing device continues to record position
 20 information. When as described above an archiving icon is
 marked, the drawing device transmits position information
 generated both before and after t_{act} . This information is
 received by the computer system. The information that is
 generated at t_{act} implies that the computer system should
 25 make open a second information object 46, named
 maths2.svg, vis-à-vis the application in the computer
 system. The second information object 46 is related to

5 information generated after test (in pages 42, 43, 44) is
inserted in the second information object 46, for
instance a second file.

10 solutely coded, i.e. designed so that if a subset, with a
certain minimum size, of the pattern is recorded the
position of this subset in the total pattern can be
determined unambiguously.

tion-coding pattern shown in Fig. 10 is made up as shown in WO 00/73983 where a large dot represents a "one" and a small dot represents a "zero". However, it is also possible to design the position-coding pattern as shown in WO 01/26032, see Fig. 11, where different displacements of a dot in relation to a virtual raster pattern (indicated by dashed lines) codes different symbol values.

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